

# इंटरनेट

# मानक

## Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 7068 (1973): 6.25 mm calibration tape [LITD 7: Audio, Video and Multimedia Systems and Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



IS : 7068 - 1973

*Indian Standard*  
SPECIFICATION FOR  
6.25-mm CALIBRATION TAPE

UDC 681.84.083.84



© Copyright 1974

**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110001

~~Page 11 of 11~~

August 1974

**AMENDMENT NO. 1 NOVEMBER 1988**

**TO**

**IS : 7068 - 1973 SPECIFICATION FOR 6·25-mm  
CALIBRATION TAPE**

( *Title and clause 1.1* ) — Substitute '6·30 — 0<sup>0</sup>·06 mm' for '6·25 mm'.

( LTDC 23 )

Printed at Printograph, New Delhi, India

# Indian Standard

## SPECIFICATION FOR

### 6.25-mm CALIBRATION TAPE

Acoustics Sectional Committee, ETDC 27

<i>Chairman</i>	<i>Representing</i>
DR M. PANCHOLY	National Physical Laboratory (CSIR), New Delhi
<i>Members</i>	
SHRI I. S. AHUJA	Ahuja Radios, New Delhi
SHRI H. K. L. ARORA	All India Radio and Electronics Association, Bombay
SHRI R. G. KESWANI ( <i>Alternate</i> ) (Bombay)	
SHRI ARUP CHAUDHURI ( <i>Alternate</i> ) (Calcutta)	
SHRI L. S. V. EASWAR ( <i>Alternate</i> ) (Madras)	
DR A. S. BHADURI	National Test House, Calcutta
SHRI B. P. GHOSH ( <i>Alternate</i> )	
LT-COL T. R. BHALOTRA	Ministry of Defence (DGI)
MAJ T. S. CHOWDHARY ( <i>Alternate</i> )	
SHRI P. S. ENDLAW	Posts & Telegraphs Department, New Delhi
SHRI J. S. MONGA	Bolton Industrial Corporation, New Delhi
SHRI M. S. MONGA ( <i>Alternate</i> )	
SHRI K. D. PAVATE	Central Electronics Engineering Research Institute (CSIR), Pilani
SHRI M. R. KAPOOR ( <i>Alternate</i> )	
DR B. S. RAMAKRISHNA	Indian Institute of Science, Bangalore
CMDE K. R. RAMNATH	Ministry of Defence (R & D)
SHRI M. S. NARAYANAN ( <i>Alternate</i> )	
REPRESENTATIVE	Mulchandani Electricals & Radio Industries Ltd, Bombay
RESEARCH ENGINEER	Directorate General of All India Radio, New Delhi
SHRI M. SANKARALINGAM	Directorate General of Supplies & Disposals (Inspection Wing), New Delhi
DR D. L. SUBRAHMANYAM	Sarabhai Electronics Research Centre, Ahmedabad
SHRI L. C. VASWANI	Railway Board (Ministry of Railways)
DEPUTY DIRECTOR, STANDARDS (TELECOMMUNICATIONS) ( <i>Alternate</i> )	

(Continued on page 2)

© Copyright 1974

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

## IS : 7068 - 1973

(Continued from page 1)

### *Members*

SHRI L. K. VISWANATH

SHRI K. G. AJWANI (*Alternate*)

SHRI D. P. SHARMA (*Alternate*)

SHRI N. SRINIVASAN,  
Deputy Director (Elec tech)

### *Representing*

Philips India Ltd, Calcutta; and The Radio  
Electronics & Television Manufacturers'  
Association, Bombay

Philips India Ltd, Calcutta  
The Radio Electronics & Television Manufac-  
turers' Association, Bombay

Director General, ISI (*Ex-officio Member*)

### *Secretary*

SHRI S. MUKHOPADHYAY

Assistant Director (Elec tech), ISI

## Panel for Tapes and Tape Recorders, ETDC 27 : P5

### *Convener*

DR M. PANCHOLY

National Physical Laboratory (CSIR), New Delhi

### *Members*

SHRI R. CHATTOPADHYAY

SHRI A. DAS GUPTA

SHRI N. N. KHANNA

SHRI K. D. PAVATE

SHRI M. SANKARALINGAM

SHRI HARSH VARDHAN

SHRI S. B. THAKAR (*Alternate*)

SHRI A. N. VENKATARAMAN

Tarzian (India) Pvt Ltd, Bombay

Philips India Ltd, Bombay

Directorate General of All India Radio, New Delhi

Central Electronics Engineering Research Institute  
(CSIR), Pilani

Directorate General of Supplies and Disposals  
(Inspection Wing), New Delhi

Film & Television Institute of India (Ministry  
of Information & Broadcasting), Poona

Bharat Electronics Ltd, Bangalore

# *Indian Standard*

## SPECIFICATION FOR 6·25-mm CALIBRATION TAPE

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 11 June 1973, after the draft finalized by the Acoustics Sectional Committee had been approved by the Electrotechnical Division Council.

**0.2** Calibration tapes are required for making adjustments and comparative assessments of the reproducing performance of both professional and domestic magnetic tape recording and reproducing equipment.

**0.3** This standard specifies the electromagnetic properties of calibration tapes.

**0.4** This standard applies to both lubricated and nonlubricated tapes recorded across the full width of the tape, but in certain usages it may be necessary to erase a part of the recording across the width of the tape before it can be used with some types of tape equipment.

**0.5** While preparing this standard, assistance has been derived from IEC Doc : 60A (Secretariat) 41 'Standard format for calibration tapes', issued by the International Electrotechnical Commission.

**0.6** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

### 1. SCOPE

**1.1** This standard specifies the minimum requirements for 6·25-mm calibration tapes for making adjustments and comparative assessments of the reproducing performance of both professional and domestic magnetic tape recording and reproducing equipment.

---

\*Rules for rounding off numerical values (*revised*).



## **2. TERMINOLOGY**

**2.1** For the purpose of this standard, the terms and definitions given in IS : 1885 (Part III/Sec 3)-1967\* shall apply.

## **3. OBJECT**

**3.1** The object of this standard is to specify the requirements and the tolerances to which the calibration tapes shall be made so that measurements made on any recording and reproducing equipment using the tapes manufactured in accordance with the requirements of this standard shall be directly comparable.

## **4. GENERAL REQUIREMENTS**

**4.1** The calibration tape is a specified tape having selected magnetic properties. The tape shall have an intrinsic coercivity of at least 250 oersteds and a remanence of 6 flux lines at the standard level of recording.

**4.2** Each calibration tape shall have at least the following sections recorded across the full width of the tape in the order shown:

- a) Level,
- b) Azimuth,
- c) Frequency response, and
- d) Unrecorded blank section of at least 5 minutes at the corresponding speed.

Each section shall be announced.

**4.2.1** At the beginning of the tape, the nominal tape speed to which the calibration refers, the characteristics to which the tape has been recorded and the month and year of production shall be announced. This announcement shall precede the Azimuth section.

**4.2.2** The content and the level to which each section is recorded shall be announced at the beginning of that section. Announcements shall be recorded at a peak level lower than that of the recorded signals in that section.

## **5. TAPES FOR USE AT SPEEDS OF 38.1 cm/s AND 19.05 cm/s**

**5.1 Reference Level Section** — The reference level section shall consist of a frequency band of  $1\,000 \pm 30$  Hz recorded to a level of 320 nWb/m and having a distortion of less than or equal to 1.0 percent. The duration of the frequency band shall be 30 seconds.

**5.2 Azimuth Section** — Frequency bands of 1 000 Hz and 10 kHz are recorded. The nominal level of the 1 000 Hz tone shall be 100 nWb/m.

---

\*Electrotechnical vocabulary: Part III Acoustics, Section 3 Sound recording and reproduction.

The angle of recording shall be  $90^\circ \pm 2'$  relative to the edge of the tape. The duration of the frequency bands shall be 10 seconds and 60 seconds respectively.

**5.3 Frequency Response Section** — The following frequency bands shall be recorded in the order shown:

1 000—(18 000)—16 000—14 000—12 500—10 000—8 000—6 300—  
1 000—2 000—1 000—500—250—125—80—63—40—(31.5)—1 000 Hz.

NOTE — The frequencies within parenthesis are optional. Each frequency shall be announced.

The middle 1 000 Hz, recorded at a nominal level of 32 nWb/m, shall be the reference frequency. Each band shall have a duration of 10 seconds, except for those bands containing frequencies above 10 000 Hz which shall have a duration of 20 seconds. The maximum deviation in frequency from the frequencies shown shall be  $\pm 3.0$  percent.

The deviation of the recorded levels, relative to the flux response curve as given in Fig. 3 of IS: 4479-1967\*, shall not exceed  $\pm 0.5$  dB for frequencies up to and including 10 kHz, nor  $\pm 1.0$  dB for frequencies above 10 kHz. The level fluctuations up to and including 10 kHz shall not exceed 0.5 dB and shall not exceed 1.0 dB above 10 kHz. The short term fluctuations at frequencies above 14 kHz shall not exceed  $\pm 0.25$  dB.

**5.4** For summary of characteristics of calibration tape for use at a speed of 38.1 cm/s and 19.05 cm/s, reference be made to Table 1.

## 6. TAPES FOR USE AT A SPEED OF 9.53 cm/s

**6.1 Reference Level Section** — The reference level shall consist of a frequency band of  $315 \pm 10$  Hz recorded to a level of 250 nWb/m and having a distortion of less than or equal to 1 percent. The duration of the frequency band shall be 30 seconds.

**6.2 Azimuth Section** — Frequency bands of 315 Hz and 10 kHz are recorded. The nominal level of the 315 Hz tone shall be 50 nWb/m. The angle of recording shall be  $90^\circ \pm 2'$  relative to the edge of the tape. The duration of the frequency bands shall be 10 seconds and 60 seconds respectively.

**6.3 Frequency Response Section** — The following frequency bands shall be recorded in the order shown:

315—(14 000)—12 500—10 000—8 000—6 300—4 000—2 000—1 000—  
500—315—250—125—80—63—40—(31.5)—315 Hz.

NOTE — The frequencies within parenthesis are optional. Each frequency shall be announced.

The middle 315 Hz, recorded at a nominal level of 25 nWb/m shall be the

---

\*Methods of measurements on magnetic tapes for sound recording and reproduction.

reference frequency. Bands for frequencies of above 315 Hz shall have a duration of 20 seconds and those for 315 Hz and below shall have a duration of 10 seconds. The maximum deviation in frequency from the frequencies shown shall be  $\pm 3$  percent.

The deviation of the recorded levels, relative to the flux response curve as given in Fig. 3 of IS : 4479-1967\*, shall not exceed  $\pm 0.5$  dB for frequencies up to and including 8 kHz nor  $\pm 1$  dB for frequencies above 8 kHz. The level fluctuations up to and including 8 kHz shall not exceed 0.5 dB and shall not exceed 1 dB above 8 kHz. The short term fluctuations at frequencies above 10 kHz shall not exceed  $\pm 0.5$  dB.

**6.4** For summary of characteristics of calibration tape for use at a speed of 9.53 cm/s, reference be made to Table 1.

## **7. TAPES FOR USE AT A SPEED OF 4.76 cm/s**

**7.1 Reference Level Section** — A frequency band of  $315 \pm 10$  Hz recorded to a level of 250 nWb/m and having a distortion of less than or equal to 3 percent. The duration of the frequency band shall be 30 seconds.

**7.2 Azimuth Section** — Frequency bands of 315 Hz and 10 kHz are recorded. The nominal level of the 315 Hz tone shall be 25 nWb/m. The angle of recording shall be  $90^\circ \pm 2'$  relative to the edge of the tape. The duration of the frequency bands shall be 10 seconds and 60 seconds respectively.

**7.3 Frequency Response Section** — The following frequency bands shall be recorded in the order shown:

315—10 000—8 000—6 300—4 000—2 000—1 000—500—315—250—  
125—80—63—40—315 Hz.

Each frequency shall be announced.

The middle 315 Hz, recorded at a nominal level of 25 nWb/m shall be the reference frequency. Bands for frequencies of above 315 Hz shall have a duration of 20 seconds and those for 315 Hz and below shall have a duration of 10 seconds. The maximum deviation in frequency from the frequencies shown shall be  $\pm 3$  percent.

The deviation of the recorded levels, relative to the flux response curve as given in Fig. 3 of IS : 4479-1967\*, shall not exceed 0.5 dB for frequencies up to and including 6.3 kHz nor 1 dB for frequencies above 6.3 kHz. The level fluctuations up to and including 6.3 kHz shall not exceed 0.5 dB and shall not exceed 1 dB above 6.3 kHz. The short term fluctuations at 10 kHz shall not exceed 0.5 dB.

**7.4** For summary of characteristics of calibration tape for use at a speed of 4.76 cm/s, reference be made to Table 1.

---

\*Methods of measurements on magnetic tapes for sound recording and reproduction.

TABLE 1 CHARACTERISTICS OF CALIBRATION TAPES

(Clauses 5.4, 6.4 and 7.4)

SL No.	CHARACTERISTIC	TAPES FOR USE AT A SPEED OF			
		38.1 cm/s	19.05 cm/s	9.53 cm/s	4.76 cm/s
(1)	(2)	(3)	(4)	(5)	(6)
i) Reference Level Section:					
a)	Frequency band recorded	1 000 $\pm$ 30 Hz	1 000 $\pm$ 30 Hz	315 $\pm$ 10 Hz	315 $\pm$ 10 Hz
b)	Level of recording, nominal	320 nWb/m	320 nWb/m	250 nWb/m	250 nWb/m
c)	Distortion, permissible	$\leq 1.0\%$	$\leq 1.0\%$	$\leq 1.0\%$	$\leq 3.0\%$
d)	Duration of frequency band	30s	30s	30s	30s
ii) Azimuth Section:					
a)	Frequency band recorded	1 kHz and 10 kHz	1 kHz and 10 kHz	315 Hz and 10 kHz	315 Hz and 10 kHz
b)	Reference frequency	1 000 Hz	1 000 Hz	315 Hz	315 Hz
c)	Level of recording of reference frequency, nominal	100 nWb/m	100 nWb/m	50 nWb/m	25 nWb/m
d)	Angle of recording relative to the edge of the tape	90' $\pm$ 2'	90' $\pm$ 2'	90' $\pm$ 2'	90' $\pm$ 2'
e)	Duration of frequency bands	10s at 1 kHz & 60s at 10 kHz	10s at 1 kHz & 60s at 10 kHz	10s at 315 kHz & 60s at 10 kHz	10s at 315 Hz & 60s at 10 kHz

(Continued)

TABLE 1 CHARACTERISTICS OF CALIBRATION TAPES — *Contd*

SL No.	CHARACTERISTIC	TAPES FOR USE AT A SPEED OF			
		38.1 cm/s	19.05 cm/s	9.53 cm/s	4.76 cm/s
(1)	(2)	(3)	(4)	(5)	(6)
iii) Frequency Response Section :					
a)	Frequency bands, recorded in the order specified ( <i>see</i> Notes 1 & 2)	1 000-(18 000)- 16 000-14 000- 12 500-10 000- 8 000-6 300-4 000- 2 000-1 000-500- 250-125-80-63-40- (31.5)-1 000 Hz	1 000-(18 000)- 16 000-14 000- 12 500-10 000- 8 000-6 300-4 000- 2 000-1 000-500- 250-125-80-63-40- (31.5)-1 000 Hz	315-(14 000)- 12 500-10 000- 8 000-6 300-4 000- 2 000-1 000-500- 315-250-125-80-63- 40-(31.5)-315 Hz	315-10 000-8 000- 6 300-4 000-2 000- 1 000-500-315-250- 125-80-63-40-315Hz
b)	Reference frequency	Middle 1 000 Hz	Middle 1 000 Hz	Middle 315 Hz	Middle 315 Hz
c)	Level of recording of reference frequency, nominal	32 nWb/m	32 nWb/m	25 nWb/m	25 nWb/m
d)	Duration of frequency band	For frequencies up to and including 10 kHz : 10s  For frequencies above 10 kHz : 20s	For frequencies up to and including 10 kHz : 10s  For frequencies above 10 kHz : 20s	For frequencies up to and including 315 Hz : 10s  For frequencies above 315 Hz : 20s	For frequencies up to and including 315 Hz : 10s  For frequencies above 315 Hz : 20s
e)	Deviation in frequency from the frequencies specified, <i>Max</i>	± 3.0%	± 3.0%	± 3.0%	± 3.0%

f) Deviation of recorded levels relating to the flux response curve as given in Fig. 3 of IS : 4479-1967*	For frequencies up to and including 10 kHz : $\leq \pm 0.5$ dB	For frequencies up to and including 10 kHz : $\leq \pm 0.5$ dB	For frequencies up to and including 8 kHz : $\leq \pm 0.5$ dB	For frequencies up to and including 6.3 kHz : $\leq \pm 0.5$ dB
g) Level fluctuations	For frequencies above 10 kHz : $\leq \pm 1.0$ dB	For frequencies above 10 kHz : $\leq \pm 1.0$ dB	For frequencies above 8 kHz : $\leq \pm 1.0$ dB	For frequencies above 6.3 kHz : $\leq \pm 1.0$ dB
g) Level fluctuations	For frequencies up to and including 10 kHz : $\leq \pm 0.5$ dB	For frequencies up to and including 10 kHz : $\leq \pm 0.5$ dB	For frequencies up to and including 8 kHz : $\leq \pm 0.5$ dB	For frequencies up to and including 6.3 kHz : $\leq \pm 0.5$ dB
h) Short term fluctuations	For frequencies above 10 kHz : $\leq \pm 1.0$ dB	For frequencies above 10 kHz : $\leq \pm 1.0$ dB	For frequencies above 8 kHz : $\leq \pm 1.0$ dB	For frequencies above 6.3 kHz : $\leq \pm 1.0$ dB
h) Short term fluctuations	At frequencies above 14 kHz : $\leq \pm 0.25$ dB	At frequencies above 14 kHz : $\leq \pm 0.25$ dB	At frequencies above 10 kHz : $\leq \pm 0.5$ dB	At frequencies above 10 kHz : $\leq \pm 0.5$ dB

NOTE 1 — Each frequency shall be announced.

NOTE 2 — The frequencies in parenthesis are optional.

\* Method of measurements on magnetic tapes for sound recording and reproduction.

# **INDIAN STANDARDS ON ACOUSTICS**

## **IS:**

- 1031-1967 Methods of measurements on loudspeaker and loudspeaker systems (*first revision*)
- 1032-1957 General requirements and tests for pressure unit operated horn loudspeaker systems
- 1033-1957 General requirements and tests for direct radiator moving coil loudspeakers
- 1034-1957 Loudspeaker systems for community radio receivers
- 1301-1958 Code of safety requirements for electric mains-operated audio amplifiers
- 1302-1958 Methods of measurements on audio amplifiers
- 1490-1959 Recommendations for minimum performance requirements of mains-operated public address amplifiers
- 1819-1961 Recommendations for general requirements of public address amplifiers
- 1881-1961 Code of practice for installation of indoor amplifying and sound distribution systems
- 1882-1961 Code of practice for outdoor installation of public address systems
- 1885 (Part III/Sec 1)-1965 Electrotechnical vocabulary: Part III Acoustics, Section 1 Physical acoustics
- 1885 (Part III/Sec 2)-1966 Electrotechnical vocabulary: Part III Acoustics, Section 2 Acoustical and electro-acoustical systems
- 1885 (Part III/Sec 3)-1967 Electrotechnical vocabulary: Part III Acoustics, Section 3 Sound recording and reproduction
- 1885 (Part III/Sec 4)-1966 Electrotechnical vocabulary: Part III Acoustics, Section 4 Sonics, ultrasonics and underwater acoustics
- 1885 (Part III/Sec 5)-1966 Electrotechnical vocabulary: Part III Acoustics, Section 5 Speech and hearing
- 1885 (Part III/Sec 6)-1967 Electrotechnical vocabulary: Part III Acoustics, Section 6 Acoustical instruments
- 2032 (Part XII)-1969 Graphical symbols used in electrotechnology: Part XII Electro-acoustic transducers and recording and reproduction systems
- 2264-1963 Preferred frequencies for acoustical measurements
- 2382-1970 Mounting dimensions of loudspeakers (*first revision*)
- 2748-1964 Methods of measurements on microphones
- 3028-1965 Method of measurement of noise emitted by motor vehicles
- 3641-1966 Methods of measurements on hearing aids
- 3931-1966 Sound level meters for the measurement of noise emitted by motor vehicles
- 3932-1966 Sound level meters for general purpose use
- 3956-1967 Dimensions of spools for magnetic tapes for sound recording and reproduction
- 4242-1967 Method of measurement of acoustical noise emitted by ballasts for gaseous discharge lamps
- 4377-1967 General requirements for magnetic tapes for sound recording and reproduction
- 4406-1967 General requirements for hearing aids
- 4479-1967 Methods of measurements on magnetic tapes for sound recording and reproduction
- 4480-1967 Magnetic tapes for sound recording and reproduction
- 4482-1967 Hearing aids
- 4755-1968 Reference zero for the calibration of pure-tone audiometers
- 4758-1968 Methods of measurement of noise emitted by machines
- 6098-1971 Method of measurement of the airborne noise emitted by rotating electrical machinery
- 6229-1971 Method of measurement of the real-ear attenuation of ear protectors at threshold
- 6370-1971 Tape cassettes for domestic use
- 6391-1971 Magnetic and ceramic phonograph pick-ups
- 6964-1973 Octave, half-octave and third-octave band filters for analysis of sound and vibration
- 7068-1973 6.25-mm calibration tape
- 7136-1973 Megaphones
- 7194-1973 Assessment of noise exposure during work for hearing conservation purposes

# PUBLICATIONS OF INDIAN STANDARDS INSTITUTION

## INDIAN STANDARDS

Over 7 500 Indian Standards covering various subjects have been issued so far. Of these, the standards belonging to the Electrotechnical Group fall under the following categories:

Acoustics and acoustical measurement	Instrument transformers
Automobile electrical equipment	Insulating materials
Batteries	Insulators and accessories
Cinematographic equipment	Integrating meters
Conductors and cables	Lamps and lamp accessories
Domestic electrical appliances	Lifts and escalators
Electric welding equipment	Lightning arresters
Electrical installations, codes of practice	Motors and generators
Electrical instruments	Nomenclature and symbols
Electron tubes and valves	Power capacitors
Electronic components	Power converters
Electronic equipment	Relays
Environmental testing procedures	Rotating machinery
Fans	Semiconductor devices
Flameproof electrical equipment	Switchgear and controlgear
High voltage techniques	Transformers and reactors
Illuminating engineering	Winding wires
	Wiring accessories
	Unclassified

## OTHER PUBLICATIONS

ISI Bulletin (Published Every Month)

Single Copy	...	...	...	...	...	Rs 3.00
Annual Subscription	...	...	...	...	...	Rs 25.00
Standards: Monthly Additions						
Single Copy	...	...	...	...	...	Rs 0.30
Annual Subscription	...	...	...	...	...	Rs 3.00
Annual Reports (from 1948-49 Onwards)	...	...	...	...	...	Rs 2.00 to 5.00
ISI Handbook, 1972	...	...	...	...	...	Rs 20.00

## INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110001

Telephone : 27 01 31 ( 20 lines )

Telegrams : Manaksanstha

Branch Offices

Telephone

'Sadhna', Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001	2 03 91
F Block, Unity Bldg, Narasimharaja Square, BANGALORE 560002	2 76 49
534 Sardar Vallabhbhai Patel Road, BOMBAY 400007	35 69 44
5 Chowringhee Approach, CALCUTTA 700013	23 08 02
Flat No. 1030-31 (First Floor), Sector 22B, CHANDIGARH 160022	2 83 20
5-8-56/57 Nampally Station Road, HYDERABAD 500001	4 57 11
117/418 B Sarvodaya Nagar, KANPUR 208005	82 72
54 General Patters Road, MADRAS 600002	8 37 81
B.C.I. Bldg. (Third Floor), Gandhi Maidan East, PATNA 800004	2 56 55